VDOT Virginia Department of Transportation

Transportation and Mobility Planning

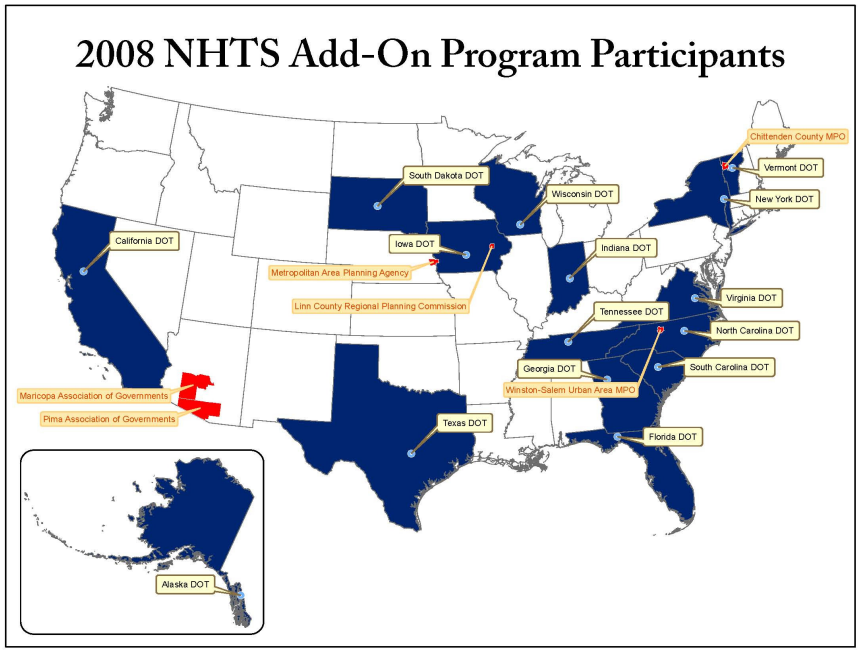
Summer 2009

VTM Connection

Virginia's Transportation Modeling Newsletter

Virginia National Household Travel Survey Update

As part of the national 2008-2009 NHTS effort, FHWA allowed states and MPOs to purchase additional Add-On survey samples for their areas. VDOT purchased 14,342 additional samples statewide at a cost of approximately $2.5 million. Nationally, over twenty states and MPOs participated in the Add-On Program including most states in the Southeast as shown in the figure below.



Data collection for the Virginia NHTS Add-On began in April, 2008 and was completed in May, 2009. The purpose of the NHTS Add-On in Virginia is to provide household travel survey data to support both metropolitan and rural transportation planning efforts statewide. By participating in the NHTS Add-On program, Virginia also will receive the benefits of being able to compare Virginia results against NHTS data from other states, the nation, and past NHTS efforts.

VDOT Travel Modeling Contacts

➲ **VTM Contact**
vtm@vdot.virginia.gov

➲ **Central Office**
Paul Agnello
(804) 786-2531
Paul.Agnello@VDOT.Virginia.gov

➲ **Northern Virginia**
Bill Mann
(703) 383-2211
Bill.Mann@.VDOT.Virginia.gov

Key Travel Modeling Websites

➲ **Virginia Travel Modeling Program**
http://www.virginiadot.org/vtm

➲ **Hampton Roads PDC Travel Modeling**
http://www.hrmpo.org/MPO_TravelDemand.asp

➲ **Metropolitan Washington COG Travel Modeling**
http://www.mwcog.org/transportation/activities/models/

➲ **FHWA Travel Model Improvement Program (TMIP)**
http://tmip.fhwa.dot.gov/

VTM SPOTLIGHT

BAHRAM JAMEI, PH.D., P.E.

Senior Transportation Engineer, VDOT Northern Virginia District

Bahram was born in Tehran, Iran and was interested in transportation from childhood. He immigrated to the United States in the late 1970's to pursue an education in transportation engineering.

Bahram obtained a B.S. in Civil Engineering from Georgia Tech in 1980 and his Ph.D. in Transportation Engineering and Planning from Virginia Tech in 1984. During his time at Virginia Tech, Bahram became interested in pursuing a career in transportation planning and travel demand modeling through a National Science Foundation (NSF) grant that he obtained to conduct emergency evacuation planning using travel demand models. For his research project, Bahram developed a hurricane evacuation model for the City of Virginia Beach.

Over the next four years, Bahram worked for both Virginia Tech doing post-doctorate transportation research and for the Bridgeport, Connecticut MPO.

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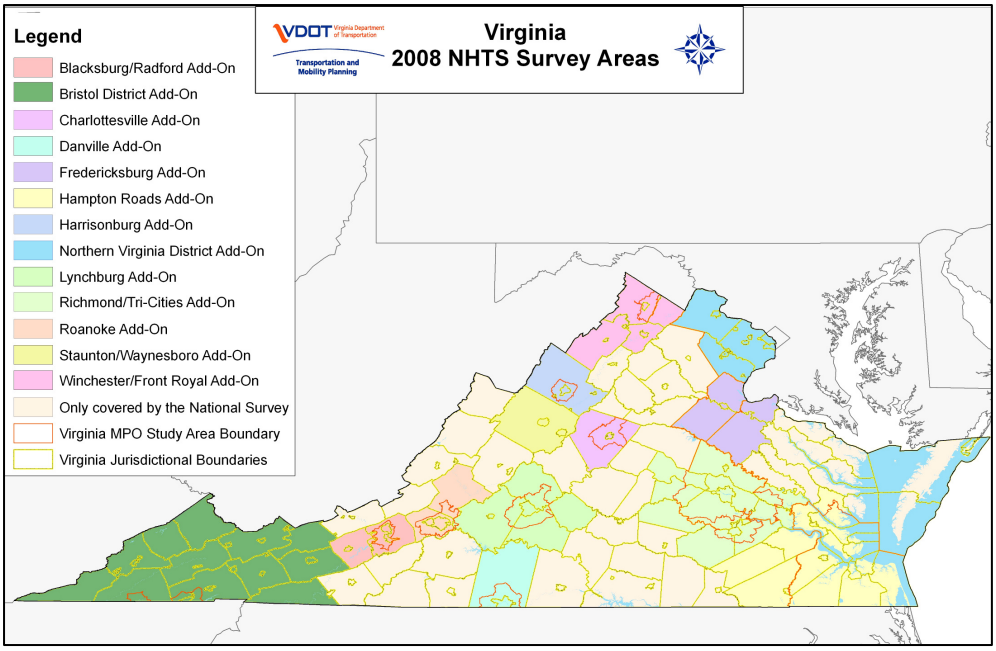
Nationally about 125,000 samples were collected as part of the Add-On program. Additionally, about 25,000 national samples were collected bringing the total number of NHTS samples collected to over 150,000. In Virginia and nationwide, there was a small level off oversampling done by FHWA's contractor Westat. As a result, the total number of NHTS Add-On samples in Virginia ended up being 14,584, about 1.7% more than the number originally expected. A map showing the NHTS survey areas in Virginia is shown below.



Within the next few years, VDOT plans to use the new NHTS data to support a variety of transportation planning efforts including redeveloping travel demand models for Virginia metropolitan areas, the Tidewater superregional model area, and the statewide model. The table below shows the actual number of survey samples collected for each survey area of the state.

Survey Area	2008 State Population Estimate	Add-On Sample Target	Actual Survey Samples
Northern Virginia District	2,180,340	400	408
Hampton Roads	1,658,458	3,085	3,113
Richmond/Tri-Cities	1,112,193	2,200	2,225
Fredericksburg	327,442	1,200	1,218
Large Model Area Subtotal	**5,278,433**	**6,885**	**6,964**
Roanoke	240,207	1,000	1,024
Lynchburg	241,345	1,000	1,013
Charlottesville	132,831	1,057	1,076
Winchester/Front Royal	153,430	1,000	1,013
Blacksburg/Radford	139,478	750	780
Staunton/Waynesboro	114,047	750	763
Harrisonburg	118,132	750	771
Danville	107,300	750	761
Small Model Area Subtotal	**1,246,770**	**7,057**	**7,201**
Bristol District	**358,028**	**400**	**419**
Grand Total For Surveyed Area	**6,883,231**	**14,342**	**14,584**

NEWS BRIEFS

- VDOT has switched to using version 5.0.3 of CUBE Base and CUBE Voyager software as this version corrects some compatibility problems that 5.0.2 has with ArcGIS.

  CUBE Version 5.1 is undergoing beta testing and should be available in early 2010.

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The survey data collected from this effort will provide planners across Virginia with a rich data source to support a variety of transportation planning applications. Data from this survey effort is in the process of being geocoded and post processed by FHWA's contractor Westat and will be delivered to VDOT this Fall. VDOT staff will review the NHTS data and refine geocoding as needed this Winter/Spring and plans to make the data set available for analysis and research by Summer, 2010.

For more information about NHTS, please visit:

Official NHTS website: http://nhts.ornl.gov/
FHWA's NHTS website: http://www.fhwa.dot.gov/policy/ohpi/nhts/index.htm
NHTS FAQs website: http://www.fhwa.dot.gov/policy/ohpi/nhts/nhtsspinfo.htm

University NHTS Effort Scheduled For This Fall

To supplement the National Household Travel Survey (NHTS) Add-On effort, the Virginia Department of Transportation (VDOT) is partnering with four universities to conduct a supplemental NHTS survey effort for their university student populations to better understand university student travel behavior. These four universities are listed below:

1. Old Dominion University (ODU)
2. University of Virginia (UVA)
3. Virginia Commonwealth University (VCU)
4. Virginia Tech (VT)

VDOT is doing this because the statewide NHTS effort is expected to significantly under represent university student travel for two reasons. First, the survey relied on landline telephone numbers to survey participants which many university students do not have. Second, NHTS traditionally has a low response rate for university aged students who are successfully contacted relative to the general population. The data from this survey effort will be used to complement the statewide NHTS effort and enhance both statewide and metropolitan planning efforts including using the data to develop new university student trip purposes for travel demand models statewide.

The University NHTS effort relies on a web based approach tailored to the university student population to survey participants. The survey instrument questions were developed from the Virginia NHTS Add-On survey instrument with some adjustments made for the university application. Pre-tests of the University NHTS survey instrument were completed at all four universities this past Spring and full survey data collection is scheduled for this Fall. Approximately 1,000 university student surveys will be collected as part of this effort at each university for a total of 4,000 statewide. The survey data will be geocoded and postprocessed during the Winter/Spring of 2010 and will be available by Summer, 2010. Please look for future updates on this survey effort in the next edition of VTM Connection.

VTM Spotlight *(continued)*

His post-doctorate research projects for Virginia Tech included helping develop rules and regulations for the transportation of hazardous materials through the Commonwealth of Virginia. In 1988, Bahram joined the New York City Department of Transportation (NYC DOT) and worked as the deputy director for a major project to eliminate\reduce congestion and improve air quality using travel demand management (TDM) strategies.

In 1990, Bahram joined the Virginia Department of Transportation to work as a transportation engineer in the Northern Virginia District Transportation Planning Division. In this capacity, Bahram is responsible for travel forecasting activities in the district which includes developing traffic forecasts for Location and Design and for environmental studies, and reviewing major transportation studies developed by VDOT consultants and local jurisdictions in Northern Virginia (NOVA). Examples of major projects in NOVA that Bahram has been a part of include the I-66 MIS, I-495 Capital Beltway and I-95/I-395 HOT Lane PPTA projects, Tri-County Parkway EIS, I-95 Corridor Study, US 1 Location Study, and Manassas National Battlefield Parkway By-Pass EIS. He has also participated in the development of the Highway User Benefits Manual and software for VDOT.

Bahram also represents VDOT on the Washington MPO (NCRTPB)'s Traffic Forecasting Subcommittee (TFS) which serves as the Washington MPO's model user's group. Bahram is also involved in helping NCRTPB staff maintain the MPO model covering NOVA and has been involved in a number of efforts over the years including the recent Washington Activity Based Household Travel Survey effort and the effort to create the next generation of the Washington MPO model, called Version 2.3, which is expected to be released next year.

News Briefs *(continued)*

- The 2010 TAZ Definition process is scheduled to kick off by early 2011 and continue into Fall, 2011. The business rules governing the process, e.g., guidelines and standards are scheduled to be released in Fall, 2010. The process will delineate two levels of TAZs: Small (Traditional) and Large (minimum 20,000 population).

Over 50 Planning Staff Turnout for VTM CUBE Training Events

Over 50 Virginia transportation planning staff from VDOT and several MPOs and Planning District Commissions (PDCs) attended VDOT sponsored VTM CUBE training events held in May, July, and August. The first event was VTM CUBE 5 Training held at VCU in Richmond on from May 11th through the 15th. Participants learned about travel demand modeling, the modeling within the context of the VTM policies and procedures manual, how to manage scenarios and applications within the CUBE environment, how to perform highway and transit network editing, and how to analyze and report model results.

In July, VDOT offered a one day CUBE Basics at VDOT Central Office in Richmond which covered the basics of managing scenarios within the CUBE environment, performing highway and transit network editing, and reviewing model results. In August, Citilabs provided two days of CUBE Land training at ODU's VMASC facility in Hampton Roads which provided an overview of CUBE Land in the context of CUBE Base version 5.0.3. VDOT is planning to sponsor additional training opportunities in 2010 and more information will be forthcoming in early 2010.

Update on VTM Research Projects

VDOT continues to work on a number of VTM research projects designed to evaluate and test new modeling methodologies and techniques before potential implementation into Virginia travel demand models.

Recently completed projects include research into developing a more sophisticated Area Type methodology for urban travel demand models statewide and research into the feasibility of implementing Activity-Based models in Virginia. The new Area Type methodology is in the process of being implemented in eight urban travel demand models statewide and work on this project is expected to be completed this fall. The Activity Based report is available from the VTM website at:

http://www.virginiadot.org/projects/resources/vtm/VTMRP09-01_Final.pdf

Current research projects include research into developing improved Volume/Delay functions for Virginia models and the feasibility of implementing an IDAS type systems level planning tool within Virginia travel demand models similar to recent FSUTMS model development efforts underway in Florida to assist with ITS planning efforts. Both projects are scheduled to be completed later this fiscal year. New research projects analyzing Virginia NHTS results are expected to begin in 2010. Look for updates in future editions of VTM Connection.

Highlights of Virginia Travel Demand Modeling Activities

No.	District/MPO Area	Contact(s)	Current/Recent News
1	BMC	Nelson Newton Jaesup Lee	A new Blacksburg-Christiansburg CUBE model is being updated to a 2035 forecast year for the upcoming 2035 CLRP
2	Charlottesville	Juyin Chen	New CUBE Catalog model was developed to be consistent with VTM guidelines.
3	Hampton Roads	Jeremy Raw Jaesup Lee	Validating heavy truck model
4	Harrisonburg	Paul Agnello	Preparing for 2035 CLRP modeling analysis.
5	Lynchburg	Nelson Newton Juyin Chen	A new CUBE Catalog model was developed and completed and is being used for 2035 CLRP update. In addition; a model is being created with an updated validation base year (2007) for future applications.
6	Richmond/Tri-Cities	Jeremy Raw	Commencing major model update
7	Roanoke	Nelson Newton	New CUBE Catalog model is completed and ready for the 2035 CLRP.
8	Tidewater Super-Regional Model	Jeremy Raw Jaesup Lee	Finishing model setup and validating the model